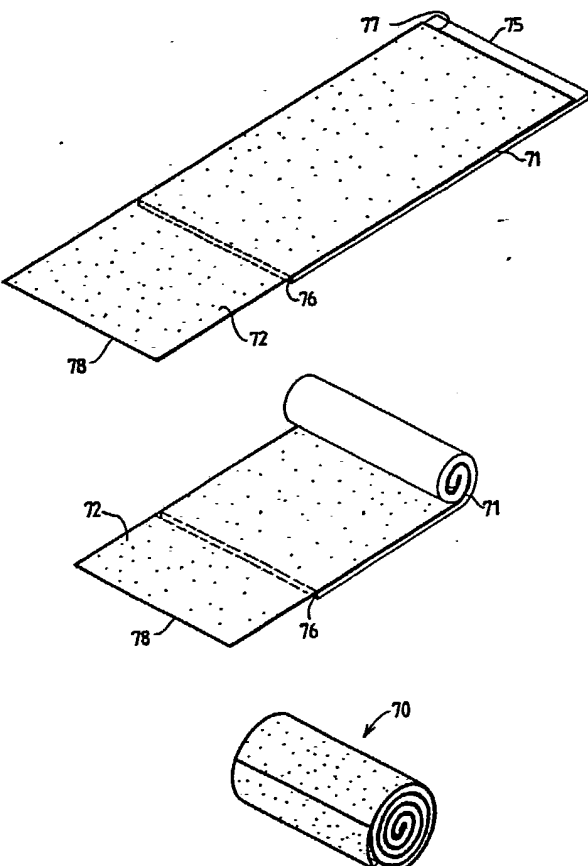




## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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<b>(54) Title:</b> IMPROVED PASTRY PRODUCT AND METHOD AND APPARATUS FOR HANDLING SAME <b>(57) Abstract</b> <p>Apparatus for handling a pastry product of the type comprising a pastry sheet unit (71) and a film sheet unit (72) which are adapted to be rolled together so that in the finished roll the film sheet unit (72) is substantially interposed between the adjacent layers of the pastry sheet unit (71), the film sheet unit (72) and pastry sheet unit (71) each having a leading edge and trailing edge (75, 76, 77, 78). In one aspect the apparatus is adapted to direct and apply the film sheet unit to a surface of the pastry sheet unit at a film application station so that the leading edge of the film sheet unit overlies and is disposed rearwardly of the leading edge of the pastry sheet unit. In another form of the apparatus it is characterised by transport means (8) for transporting the pastry past the film application station whereafter the units are transferred to delivery means (46, 48) which presents the units to the rolling means (85) the direction of travel of the transport means being at right angles to that of the delivery means.</p> 		

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IMPROVED PASTRY PRODUCT AND METHOD AND APPARATUS  
FOR HANDLING SAME

The present invention relates generally to pastry or like products and to a method and apparatus for handling such products.

The method and apparatus are particularly suitable  
5 for use in connection with pastry which is supplied to the user in at least a partially processed form and it will be convenient to hereinafter describe the invention with reference to that particular application. Nevertheless it is to be understood that the method and  
10 apparatus of the present invention may be suitable for other products.

According to one aspect of the present invention there is provided apparatus for handling a pastry product of the type comprising a pastry sheet unit and a  
15 film sheet unit which are adapted to be rolled together so that in the finished roll the film sheet unit is substantially interposed between the adjacent layers of the pastry sheet unit, the film sheet unit and pastry sheet unit each having a leading edge and trailing edge  
20 characterised in that the apparatus comprises transport means for transporting said pastry sheet unit past a film application station, means for directing and applying said film sheet unit to a surface of the pastry



sheet unit at the film application station so that the leading edge of the film sheet unit overlies and is disposed rearwardly of the leading edge of the pastry sheet unit the apparatus being suitable for use with  
5 roll forming means for at least partially rolling the film and pastry sheet units into a roll commencing from the leading edge of the pastry sheet unit.

According to another aspect of the present invention there is provided apparatus for handling a  
10 pastry product of the type comprising a pastry sheet unit and a film sheet unit which are adapted to be rolled together so that in the finished roll the film sheet unit is substantially interposed between the adjacent layers of the pastry sheet unit, the film sheet  
15 unit and pastry sheet unit each having a leading edge and trailing edge the apparatus being suitable for use with roll forming means characterised in that the apparatus comprises transport means for transporting a continuous sheet of pastry defining a plurality of said  
20 pastry sheet units past a film application station, means for directing and applying said film sheet unit to a surface of the continuous pastry sheet at the film application station, said continuous sheets having side edges parallel to the direction of travel of the  
25 transport means, the side edges of the continuous sheets subsequently defining the leading and trailing edges of the pastry and film sheet units subsequently formed, cutting means for selectively cutting said continuous sheets into the discrete sheet units, delivery means for  
30 delivering the sheet units from the transport means to the roll forming means, the direction of travel of the



delivery means being substantially normal to the direction of travel of the transport means.

In this latter mentioned aspect the leading edge of each film sheet unit may also overlies and be disposed rearwardly of the leading edge of the pastry sheet unit.

Preferably a portion of the film sheet unit and its trailing edge extend rearwardly of the trailing edge of the pastry sheet unit so that after rolling the final outer portion of the roll of pastry sheet unit is overlaid by the trailing portion of the film sheet unit.

In the first mentioned aspect above the apparatus may also include means for feeding pastry material to the transport means as a continuous sheet which defines a plurality of said pastry sheet units said continuous sheets having side edges parallel to the direction of travel of the transport means. The apparatus may further include means for feeding film sheet onto a surface of the continuous film sheet which defines a plurality of said film sheet units and in the direction of travel of the transport means the side edges of the continuous sheet defining the leading and trailing edges of the pastry and film sheet units subsequently formed. Preferably cutting means is provided for selectively cutting said continuous sheets into the discrete sheet units. Delivery means may be provided for delivering the sheet units from the transport means to the roll forming means.

Preferably two delivery means are arranged in parallel and the gate being adapted to selectively



transfer sheet units to one or the other of the parallel delivery means.

According to yet another aspect of the present invention there is provided a method of handling a  
5 pastry product of the type comprising a pastry sheet unit and a film sheet unit which are adapted to be rolled together so that, in the finished roll, the film sheet unit is substantially interposed between the adjacent layers of the pastry sheet unit the film sheet  
10 unit and the pastry sheet unit each having a leading edge and a trailing edge, the method characterised by the steps of positioning the film sheet unit on top of the pastry sheet unit so that the leading edge of the film sheet unit is disposed rearwardly of the leading  
15 edge of the pastry sheet unit and rolling the two sheet units together commencing from the leading edge of the pastry sheet unit.

Preferably the direction of travel of the delivery means is substantially normal to the direction of travel  
20 of the transport means.

Preferably the delivery means is mounted for reciprocating movement in the direction of travel of the transport means.

The apparatus may further include transfer means  
25 for transferring the sheets from the transport means to the delivery means. Preferably the transfer means comprises a gate which is adapted to open and close.

The apparatus may further include spacer means for spacing the sheet units from one another after being cut  
30 by the cutting means. Preferably the delivery means comprises a conveyor supported on a carriage which is



adapted for reciprocating movement in the direction of travel of the transport means. The carriage may include a power screw adapted to cause the reciprocating movement.

- 5 According to yet another aspect of the present invention there is provided a pastry product comprising a pastry sheet unit and a film sheet unit which are adapted to be rolled together so that in the finished roll the finished sheet unit is substantially interposed  
10 between the adjacent layers of the pastry sheet unit, the film sheet unit and the pastry sheet unit having a leading edge and a trailing edge characterised by the leading edge of the film sheet unit overlying and extending rearwardly of the leading edge of the pastry  
15 sheet unit prior to being rolled together.

- In the particular form of the invention in which the leading edge of the film sheet is displaced rearwardly of the leading edge of the pastry sheet so that when rolling is commenced the leading edge of the  
20 pastry sheet will initially contact a portion of the pastry sheet. When used in connection with the rolling means described above this provides sufficient frictional contact for rolling to continue.

- By the term film sheet is meant any suitable  
25 interleaving material such as for example wax paper polymeric material or the like.

Preferred embodiments of the invention will hereinafter be described with reference to the accompanying drawings, in which:

- 30 Figure 1 is a schematic side elevation of apparatus according to the invention,



Figure 2 is a plan view of the apparatus shown in Figure 1,

Figure 3 is a schematic side elevation of apparatus for forming the sheet products into a roll,

5 Figure 4 is a plan view of the apparatus shown in Figure 3.

Figures 5 and 6 are more detailed views of the transfer means which form part of the apparatus shown in Figures 1 and 2.

10 Figures 7 to 9 are more detailed schematic views of the delivery means which form part of the apparatus shown in Figures 1 and 2; and

Figures 10 to 12 are schematic views showing the formation of the pastry product according to the  
15 invention.

As best seen in Figures 10 to 13 the pastry product of the present invention comprises a pastry sheet unit 71 and a film sheet unit 72 which are adapted to be rolled together to form a finished roll 70. Each sheet  
20 unit 71 and 72 has a leading edge and a trailing edge 75 and 76 and 77 and 78 respectively. When rolled together the film sheet unit 72 is interposed between adjacent layers of the pastry sheet unit 71 so as to inhibit the adjacent layers from sticking together. In the product  
25 of the present invention, prior to rolling, the leading edge portion 79 of the film, sheet unit 72 is displaced rearwardly from the leading edge 75 of the pastry sheet unit 71 and rolling is instigated from the leading edges of the sheets. As shown it is preferable that the  
30 trailing edge of the film sheet unit is disposed rearwardly relative to that of the pastry sheet unit.





Thus by rolling in the manner shown it is possible to form a roll 70 in which the last surface portion of the pastry sheet unit is overlaid by the trailing portion of the film sheet unit.

- 5 Referring to Figures 1 to 5 of the drawings, pastry material in the form of a continuous sheet 60 having side edges 61 is fed to film applying station 5 via a conveyor (not shown). At the film applying station 5 a roll of film material 20 is mounted and arranged to be  
10 fed to the sheet of pastry 60 through the film guide and application device 15 which comprises suitably arranged drive rolls and guides. The sheet of pastry 60 is transferred through the applying station 5 via transport means 8 in the form of a conveyor 9. Thus the pastry  
15 material and film applied thereto are at this stage in the form of continuous sheets 60 and 20 from which the sheet units are formed. The leading and trailing edges of each sheet unit are at this stage defined by the parallel side edges 61 and 21 of the continuous sheets.  
20 Although many different types of film material could be suitable for the product a preferred material is a plastic film termed CRISPY-WRAP (Trade Mark).

- The drive rolls and guides 15 are so arranged so that the edges 21 of the continuous film sheet 20 are  
25 offset relative to the side edges 61 of the continuous pastry sheet 60 thereby enabling the sheet units and their relative disposition as described above to be achieved. Preferably since the overlap of the trailing edge portion of the continuous sheet unit is wider than  
30 the portion of the leading edge thereof relative to that



of the pastry sheet the roll of film sheet is slightly wider than the continuous sheet of pastry.

Preferably water is applied to the surface of the pastry sheet prior to applying the film sheet 20 thereto the water tending to enhance adhesion between the two sheets. The water may be applied using a water roller however in a preferred form a plurality of nozzles (not shown) are arranged at the station just upstream from the drive rolls and guides 15.

10 Cutting means 40 in the form of a powered guillotine separates the continuous sheets into discrete sheet units 71 and 72 of selected size. The guillotine is disposed downstream of the station 5. Suitable control means is provided to control operation of the transport conveyor 9 and the guillotine.

15 The separate sheet units 71 and 72 are then transferred to a spacer means in the form of an accelerating conveyor belt 35 which spaces adjacent sheets apart at a desired distance. Such a belt is of conventional form and it is not necessary to describe in detail here.

The separate sheet units are then selectively transferred to delivery means in the form of conveyors 46 and 48 whose direction of travel is normal to the direction of travel of the transport conveyor 9. The delivery conveyors 46 and 48 are mounted on a carriage member 49 which is adapted to reciprocate in a direction parallel to the direction of travel of the feed conveyor and which is operable to move at substantially the same speed as the conveyor 35 so that the sheets of material

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can be transferred thereto with little or no relative movement between the two conveyor systems.

Referring to Figures 7 to 9 which show one of the delivery conveyors 46 comprises a conveyor belt 50 which  
5 is driven by motor 51. The conveyor belt 50 is mounted on a carriage member 49 which includes a pair of guides 52 which run on tracks 56 supported by frame 58. A power screw 53 is operatively connected to the carriage by ball nut assemblies 54. The power screw is driven by  
10 motors 55 and 59 one motor for use when the pastry products are transferred onto it from the conveyor 35 and the other for returning it to its initial position. The motor which returns the carriage to its initial position is adapted to move it much faster than the  
15 other motor.

Transfer means comprising a gate 36 is operable via a photo-electric counter to permit the transfer of a select number of sheets to delivery conveyor 46 and thereafter enable a further select number of sheets to  
20 be transferred to delivery conveyor 48.

The gate 36 is operable for movement between a lowered position in which the sheets pass from conveyor 35 to conveyor 39 from which the sheets are transferred to delivery conveyor 48, and an upper position in which  
25 the sheets are transferred to delivery conveyor 46. The gate 36 is actuated by solenoid 37 and lever 38.

The sheets when positioned on the delivery conveyors 46 and 48 are now arranged with their leading edges facing the direction of travel. The delivery  
30 conveyors transfer the sheets to roll-up apparatus 85.



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The roll-up apparatus comprises a work station which includes a conveyor belt 86 a leading edge pick-up device 87 and a drag inducing member 88. Thus as the leading edge of the pastry material approaches the

5 station a series of fingers which are pivotally mounted pick-up the leading edge so that it is turned back on itself whereafter this portion engages the drag member which is in the form of a chain wire mesh which thereby at least partially rolls the two sheets together.

10 The partially rolled product is then transferred to a further station where rolling of the product is completed. After rolling is completed the product can be transferred to a packaging station where it is placed in a package.

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CLAIMS:

1. Apparatus for handling a pastry product of the type comprising a pastry sheet unit (71) and a film sheet unit (72) which are adapted to be rolled together so that in the finished roll the film sheet unit (72) is substantially interposed between the adjacent layers of the pastry sheet unit (71), the film sheet unit (72) and pastry sheet unit (71) each having a leading edge and trailing edge (75, 76, 77, 78) characterised in that the apparatus comprises transport means (8) for transporting said pastry sheet unit past a film application station, means (15) for directing and applying said film sheet unit to a surface of the pastry sheet unit at the film application station so that the leading edge of the film sheet unit overlies and is disposed rearwardly of the leading edge of the pastry sheet unit the apparatus being suitable for use with roll forming means (85) for at least partially rolling the film and pastry sheet units into a roll commencing from the leading edge of the pastry sheet unit.

2. Apparatus for handling a pastry product of the type comprising a pastry sheet unit (71) and a film sheet unit (72) which are adapted to be rolled together so that in the finished roll the film sheet unit (72) is substantially interposed between the adjacent layers of the pastry sheet unit (71), the film sheet unit (72) and pastry sheet unit (71) each having a leading edge and trailing edge (75, 76, 77, 78) the apparatus being suitable for use with roll forming means characterised



in that the apparatus comprises transport means (8) for transporting a continuous sheet of pastry defining a plurality of said pastry sheet units past a film application station, means (15) for directing and applying said film sheet unit to a surface of the continuous pastry sheet at the film application station, said continuous sheets having side edges parallel to the direction of travel of the transport means, the side edges of the continuous sheets subsequently defining the leading and trailing edges of the pastry and film sheet units subsequently formed, cutting means (40) for selectively cutting said continuous sheets into the discrete sheet units, delivery means (46, 48) for delivering the sheet units from the transport means to the roll forming means (85), the direction of travel of the delivery means (46, 48) being substantially normal to the direction of travel of the transport means (8).

3. Apparatus according to claim 2 characterised in that the leading edge of each film sheet unit overlies and is disposed rearwardly of the leading edge of the pastry sheet.

4. Apparatus according to claim 1 or claim 2 or claim 3 further characterised in that a portion of the film sheet unit and its trailing edge extend rearwardly of the trailing edge of the pastry sheet unit so that after rolling the final outer portion of the roll of pastry sheet unit is overlayed by the trailing portion of the film sheet unit.



5. Apparatus according to claim 1 further characterised in that the apparatus includes means for feeding pastry material to said transport means as a continuous sheet which defines a plurality of said pastry sheet units said continuous sheets having side edges parallel to the direction of travel of the transport means, said apparatus further including means (20, 15) for feeding film sheet onto a surface of said continuous film sheet which defines a plurality of said film sheet units and in the direction of travel of the transport means (8) the side edges of the continuous sheet defining the leading and trailing edges of the pastry and film sheet units subsequently formed.

6. Apparatus according to claim 5 further characterised by cutting means (40) for selectively cutting said continuous sheets into the discrete sheet units.

7. Apparatus according to claim 6 further characterised by delivery means (46, 48) for delivering the sheet units from the transport means to the roll forming means (85).

8. Apparatus according to claim 7 wherein the direction of travel of the delivery means (46, 48) is substantially normal to the direction of travel of the transport means (8).

9. Apparatus according to claim 2 or claim 6 or claim 7 wherein the delivery means (46, 48) is mounted for



reciprocating movement in the direction of travel of the transport means.

10. Apparatus according to claim 2 or claim 6 or claim 7 or claim 8 further characterised by transfer means (36) for transferring the sheets from the transport means to the delivery means.

11. Apparatus according to any one of claims 2 to 9 wherein said apparatus further characterised by spacer means (35) for spacing the sheet units from one another after being cut by the cutting means (40).

12. Apparatus according to claim 2 or any one of claims 7 to 9 wherein said delivery means (46, 48) comprises a conveyor supported on a carriage (49) which is adapted for reciprocating movement in the direction of travel of the transport means.

13. Apparatus according to claim 12 wherein said carriage (49) includes a power screw (53) adapted to cause said reciprocating movement.

14. Apparatus according to claim 10 wherein said transfer means (36) comprises a gate which is adapted to open and close for transferring the sheet units to the delivery means (46, 48).

15. Apparatus according to claim 10 wherein the apparatus comprises two delivery means (46, 48) arranged in parallel and said gate being adapted to selectively





transfer sheet units to one or the other of said parallel delivery means.

16. A method of handling a pastry product of the type comprising a pastry sheet unit (71) and a film sheet unit (72) which are adapted to be rolled together so that, in the finished roll, the film sheet unit (72) is substantially interposed between the adjacent layers of the pastry sheet unit (71) the film sheet unit (72) and the pastry sheet unit (71) each having a leading edge and a trailing edge (75, 76, 77 and 78), the method characterised by the steps of positioning the film sheet unit (72) on top of the pastry sheet unit (71) so that the leading edge of the film sheet unit is disposed rearwardly of the leading edge (75) of the pastry sheet unit (71) and rolling the two sheet units together commencing from the leading edge (75) of the pastry sheet unit (71).

17. The method according to claim 16 further characterised in that a portion of the film sheet unit and its trailing edge extend rearwardly of the trailing edge of the pastry sheet unit so that after rolling the final outer portion of the roll of pastry sheet unit is overlayed by the trailing portion of the film sheet unit.

18. A pastry product comprising a pastry sheet unit (71) and a film sheet unit (72) which are adapted to be rolled together so that in the finished roll the finished sheet unit is substantially interposed between



the adjacent layers of the pastry sheet unit, the film sheet unit and the pastry sheet unit having a leading edge and a trailing edge (75, 76, 77, 78) characterised by the leading edge of the film sheet unit overlying and extending rearwardly of the leading edge of the pastry sheet unit prior to being rolled together.



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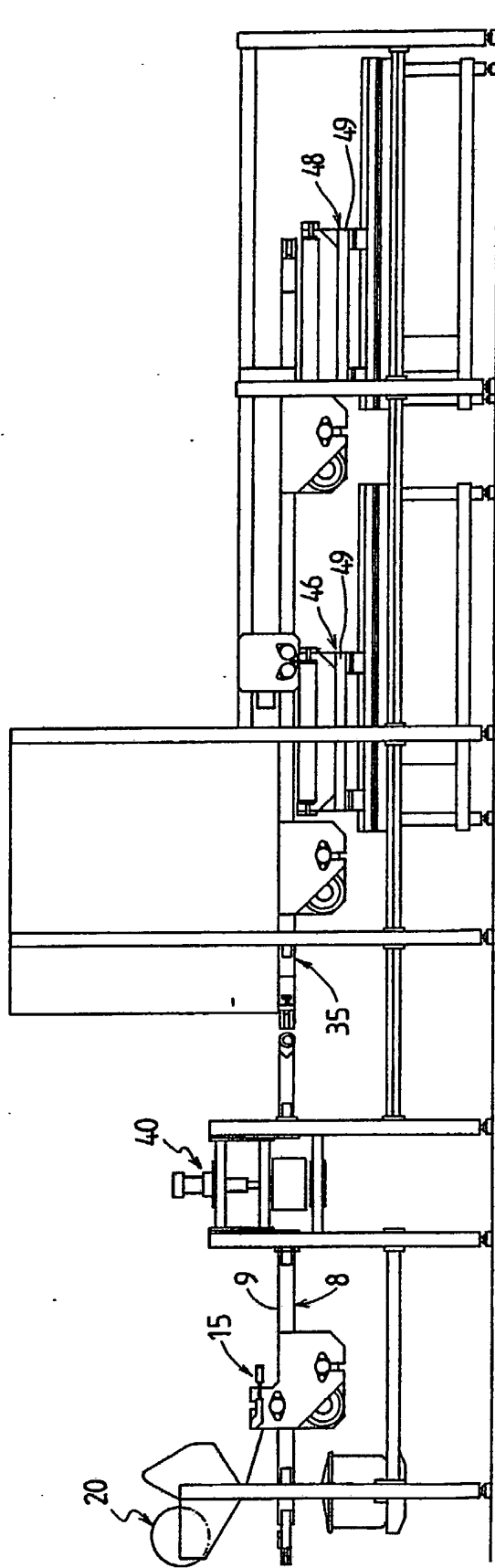


FIG. 1

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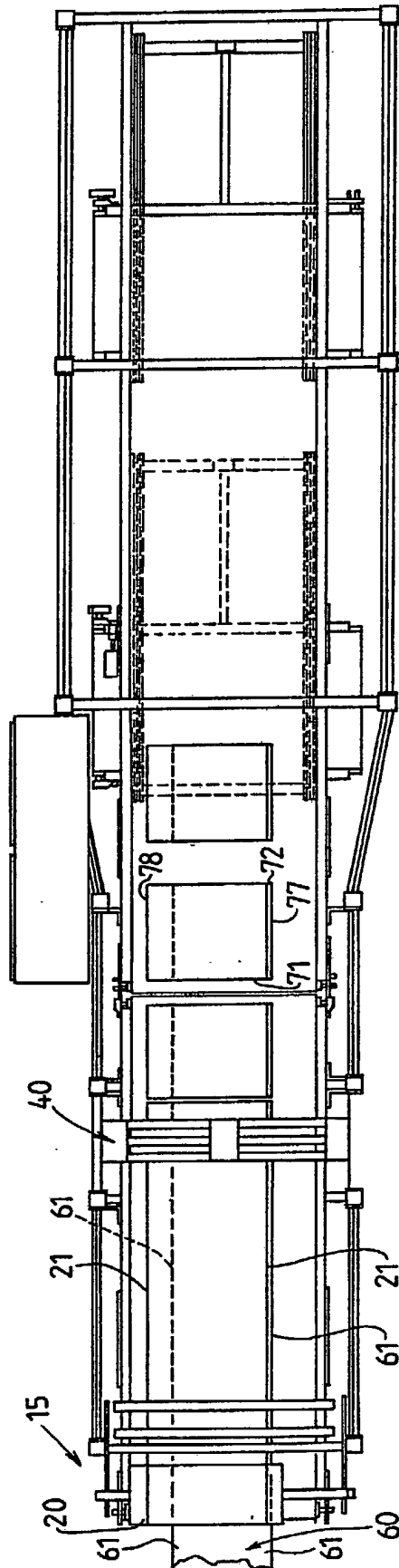


FIG 2

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FIG 3

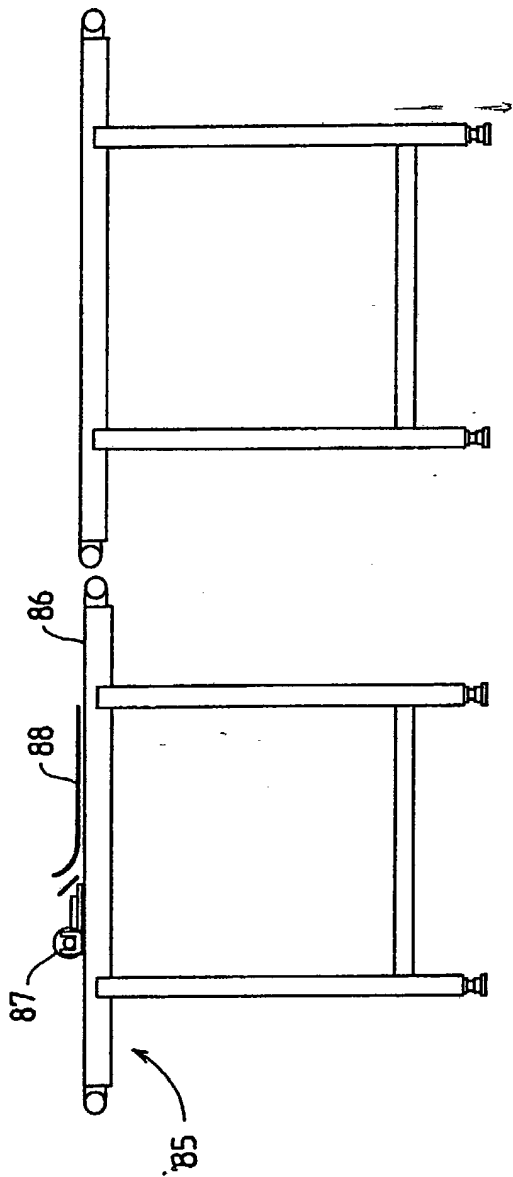
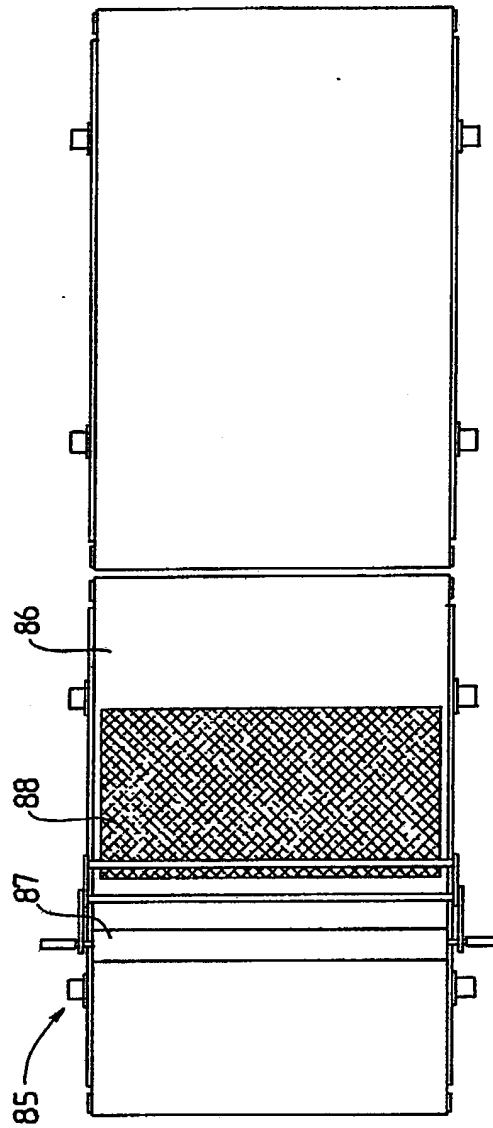


FIG 4



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FIG 6

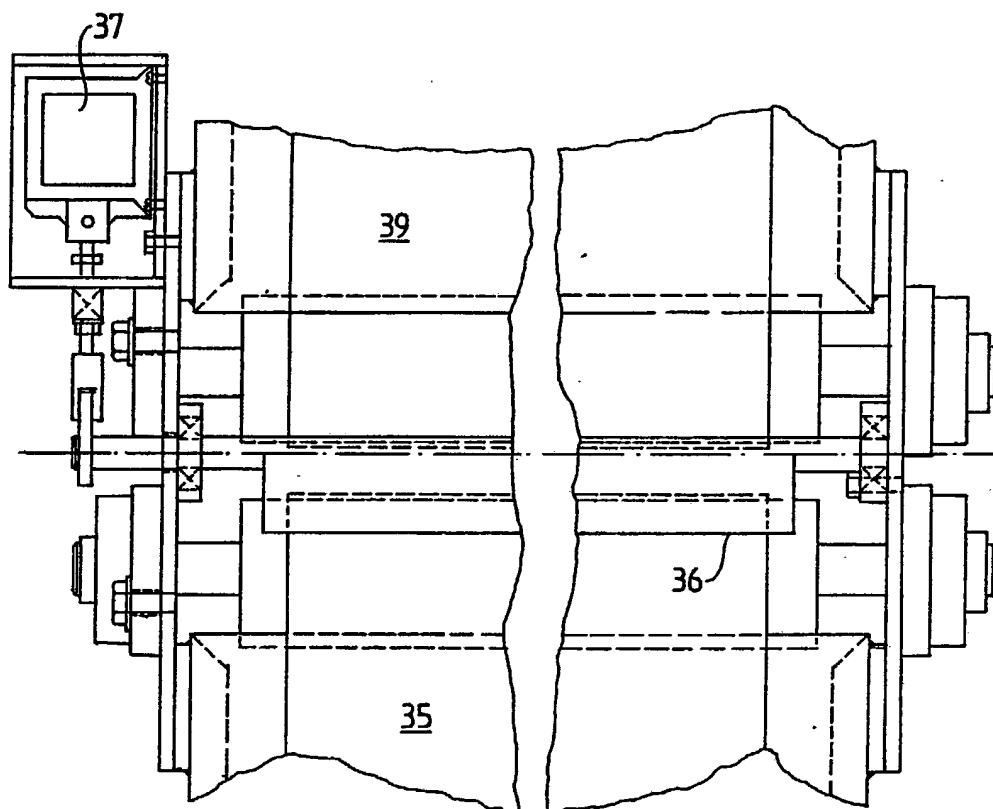
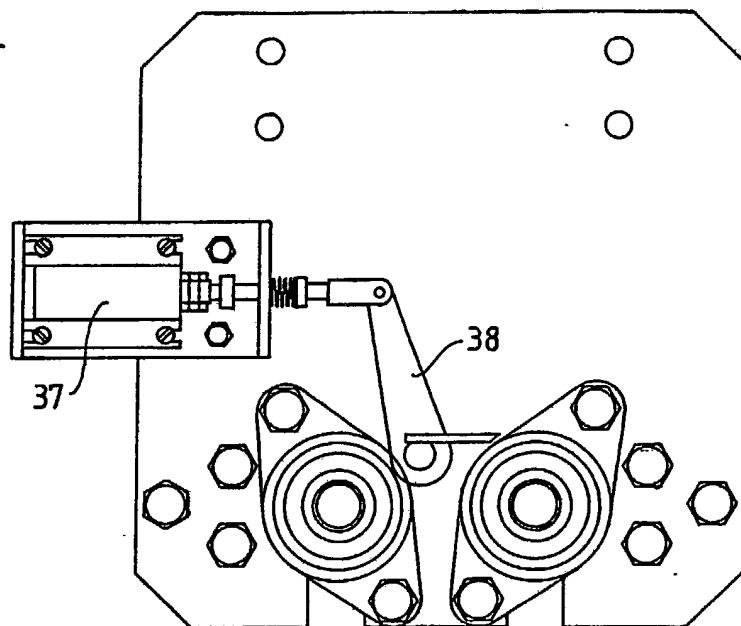
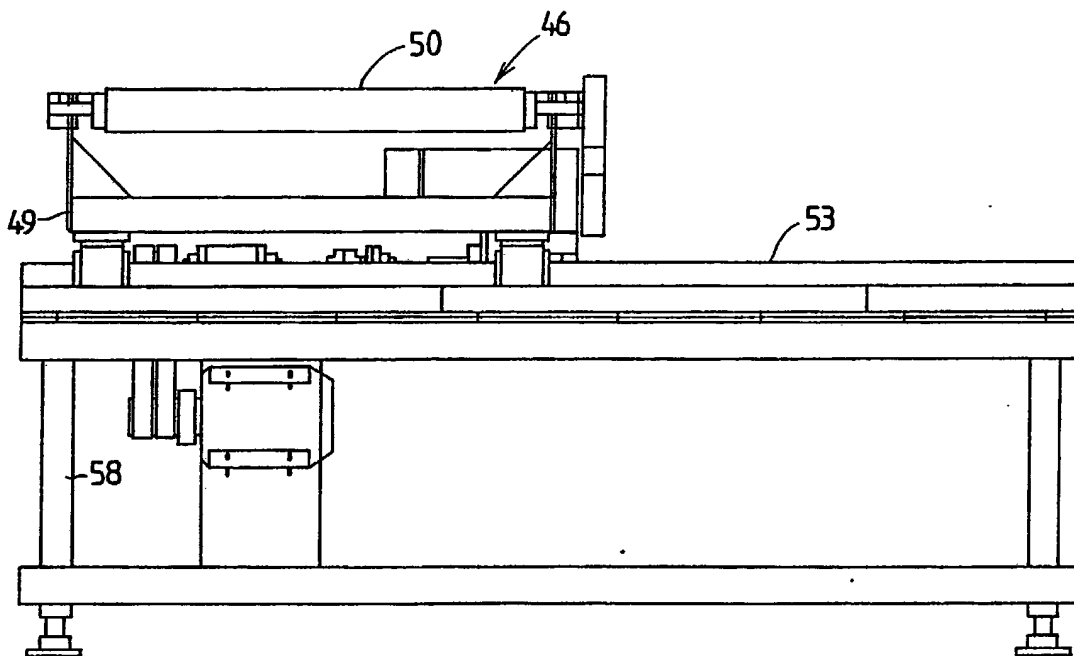
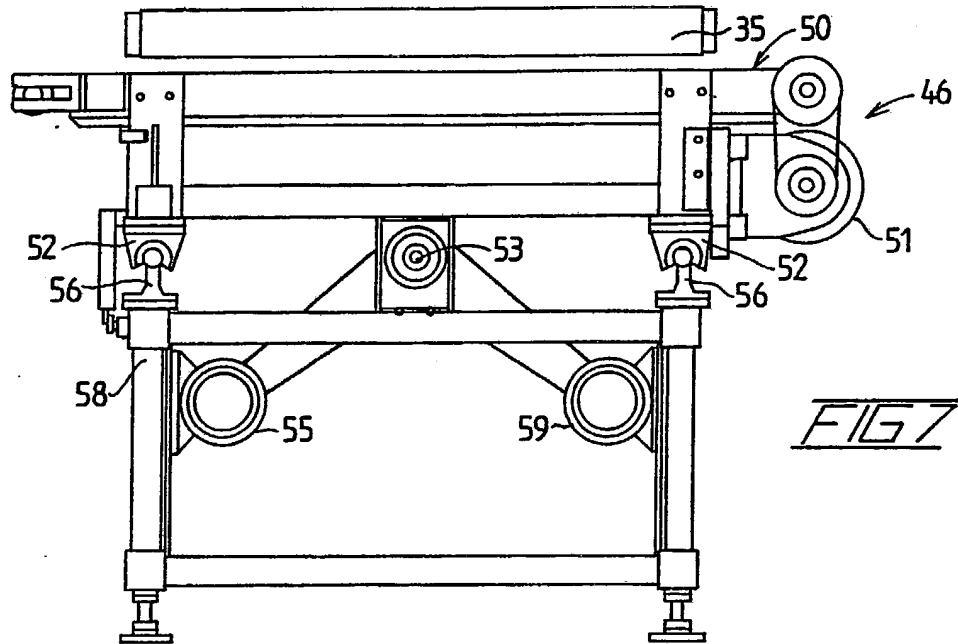
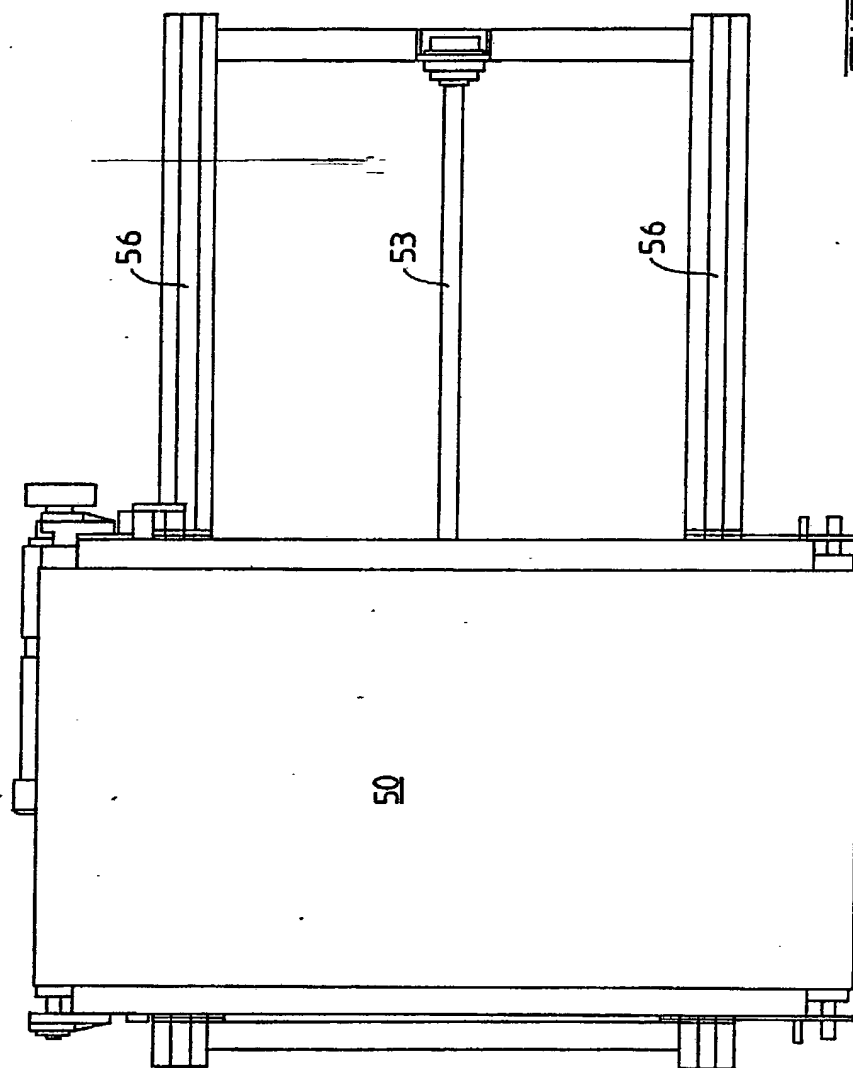


FIG 5

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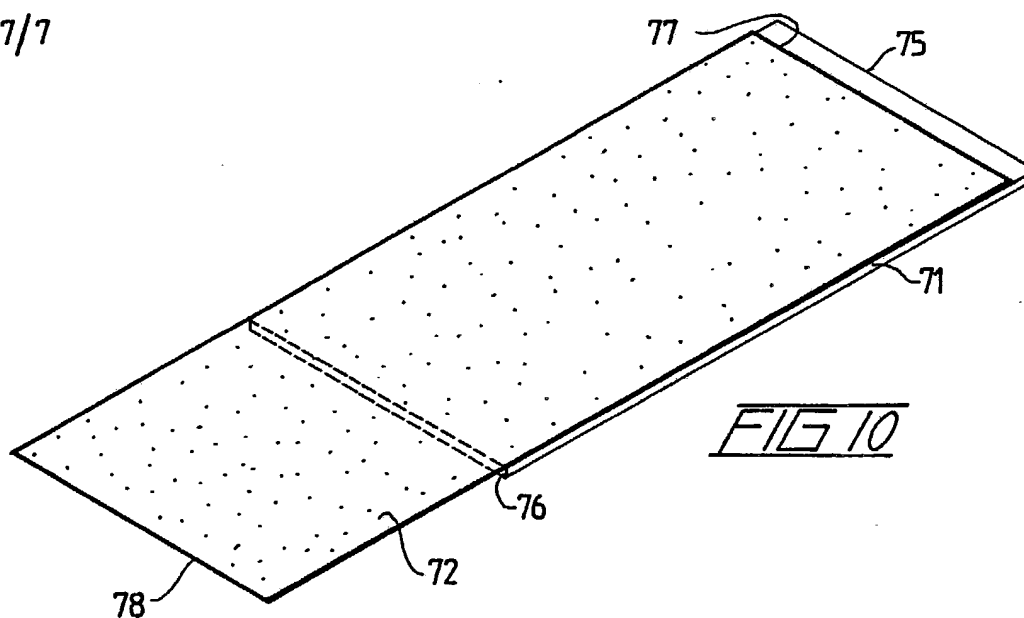


FIG 10

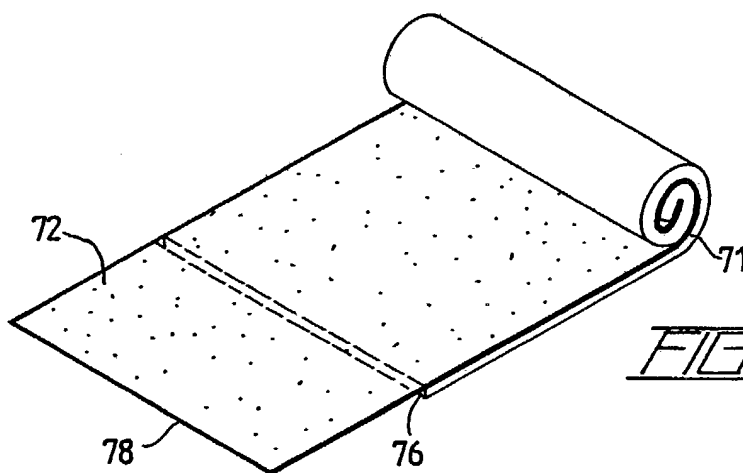


FIG 11

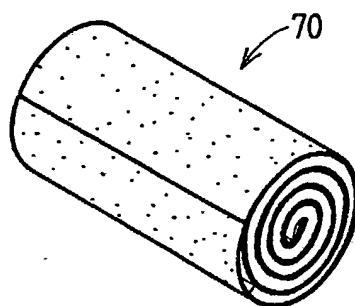


FIG 12

# INTERNATIONAL SEARCH REPORT

International Application No PCT/AU84/00052

<b>I. CLASSIFICATION OF SUBJECT MATTER</b> (If several classification symbols apply, indicate all) <sup>2</sup> According to International Patent Classification (IPC) or to both National Classification and IPC <div style="text-align: center; padding: 5px;">Int. Cl.<sup>3</sup> B65B 25/06, 11/56, A21C 3/06</div>																																			
<b>II. FIELDS SEARCHED</b> <div style="text-align: center; padding: 5px;">Minimum Documentation Searched <sup>4</sup></div> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 25%; padding: 5px;">Classification System</th> <th style="padding: 5px;">Classification Symbols</th> </tr> <tr> <td style="text-align: center; padding: 5px;">IPC</td> <td style="padding: 5px;">B65B 11/00, 11/06, 11/56, 25/06, A21C 3/06, 9/00</td> </tr> </table> <div style="text-align: center; padding: 5px;">Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched <sup>5</sup></div>			Classification System	Classification Symbols	IPC	B65B 11/00, 11/06, 11/56, 25/06, A21C 3/06, 9/00																													
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IPC	B65B 11/00, 11/06, 11/56, 25/06, A21C 3/06, 9/00																																		
AU : IPC as above; Australian Classification 57.4																																			
<b>III. DOCUMENTS CONSIDERED TO BE RELEVANT</b> <sup>14</sup> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%; padding: 5px;">Category <sup>*</sup></th> <th style="width: 60%; padding: 5px;">Citation of Document, <sup>14</sup> with indication, where appropriate, of the relevant passages <sup>17</sup></th> <th style="width: 30%; padding: 5px;">Relevant to Claim No. <sup>18</sup></th> </tr> </thead> <tbody> <tr> <td style="text-align: center; padding: 5px;">X,Y</td> <td style="padding: 5px;">US, A, 2402874 (COHEN et al.) 25 June 1946 (25.06.46)</td> <td style="text-align: center; padding: 5px;">(1-18)</td> </tr> <tr> <td style="text-align: center; padding: 5px;">X,Y</td> <td style="padding: 5px;">US, A, 2450033 (COHEN) 28 September 1948 (28.09.48)</td> <td style="text-align: center; padding: 5px;">(1-18)</td> </tr> <tr> <td style="text-align: center; padding: 5px;">X,Y</td> <td style="padding: 5px;">US, A, 2804831 (OAKES) 3 September 1957 (03.09.57)</td> <td style="text-align: center; padding: 5px;">(1-15,18)</td> </tr> <tr> <td style="text-align: center; padding: 5px;">X,Y</td> <td style="padding: 5px;">US, A, 2851966 (OAKES) 16 September 1958 (16.09.58)</td> <td style="text-align: center; padding: 5px;">(1-15,18)</td> </tr> <tr> <td style="text-align: center; padding: 5px;">X,Y</td> <td style="padding: 5px;">US, A, 3704664 (FISHER) 5 December 1972 (05.12.72)</td> <td style="text-align: center; padding: 5px;">(1-18)</td> </tr> <tr> <td style="text-align: center; padding: 5px;">Y</td> <td style="padding: 5px;">US, A, 2268390 (GASE) 30 December 1941 (30.12.41)</td> <td style="text-align: center; padding: 5px;">(2)</td> </tr> <tr> <td style="text-align: center; padding: 5px;">X</td> <td style="padding: 5px;">AU, B, 23254/53 (168033) (B.B. CHEMICAL COMPANY OF AUSTRALIA PTY. LTD.) 28 October 1954 (28.10.54)</td> <td style="text-align: center; padding: 5px;">(16-18)</td> </tr> <tr> <td style="text-align: center; padding: 5px;">X</td> <td style="padding: 5px;">AU, B, 18518/45 (126635) (B.B. CHEMICAL COMPANY OF AUSTRALIA PTY. LTD.) 4 December 1947 (04.12.47)</td> <td style="text-align: center; padding: 5px;">(16-18)</td> </tr> <tr> <td style="text-align: center; padding: 5px;">X,Y</td> <td style="padding: 5px;">AU, B, 16519/53 (158665) (RUSSELL) 7 May 1953 (07.05.53)</td> <td style="text-align: center; padding: 5px;">(1-18)</td> </tr> <tr> <td style="text-align: center; padding: 5px;">X,Y</td> <td style="padding: 5px;">GB, A, 778958 (ALLIED BAKERIES LTD) 17 July 1957 (17.07.57)</td> <td style="text-align: center; padding: 5px;">(1-18)</td> </tr> </tbody> </table>			Category <sup>*</sup>	Citation of Document, <sup>14</sup> with indication, where appropriate, of the relevant passages <sup>17</sup>	Relevant to Claim No. <sup>18</sup>	X,Y	US, A, 2402874 (COHEN et al.) 25 June 1946 (25.06.46)	(1-18)	X,Y	US, A, 2450033 (COHEN) 28 September 1948 (28.09.48)	(1-18)	X,Y	US, A, 2804831 (OAKES) 3 September 1957 (03.09.57)	(1-15,18)	X,Y	US, A, 2851966 (OAKES) 16 September 1958 (16.09.58)	(1-15,18)	X,Y	US, A, 3704664 (FISHER) 5 December 1972 (05.12.72)	(1-18)	Y	US, A, 2268390 (GASE) 30 December 1941 (30.12.41)	(2)	X	AU, B, 23254/53 (168033) (B.B. CHEMICAL COMPANY OF AUSTRALIA PTY. LTD.) 28 October 1954 (28.10.54)	(16-18)	X	AU, B, 18518/45 (126635) (B.B. CHEMICAL COMPANY OF AUSTRALIA PTY. LTD.) 4 December 1947 (04.12.47)	(16-18)	X,Y	AU, B, 16519/53 (158665) (RUSSELL) 7 May 1953 (07.05.53)	(1-18)	X,Y	GB, A, 778958 (ALLIED BAKERIES LTD) 17 July 1957 (17.07.57)	(1-18)
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<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p><sup>*</sup> Special categories of cited documents: <sup>16</sup></p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> </div> <div style="width: 45%;"> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.</p> <p>"A" document member of the same patent family</p> </div> </div>																																			
<b>IV. CERTIFICATION</b> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 5px;">           Date of the Actual Completion of the International Search <sup>1</sup>  <div style="text-align: center; padding: 5px;">29 June 1984 (29.06.84)</div> </td> <td style="width: 50%; padding: 5px;">           Date of Mailing of this International Search Report <sup>2</sup>  <div style="text-align: center; padding: 5px;">(05-07-84) 5 JULY 1984</div> </td> </tr> <tr> <td style="padding: 5px;">           International Searching Authority <sup>3</sup>  <div style="text-align: center; padding: 5px;">AUSTRALIAN PATENT OFFICE</div> </td> <td style="padding: 5px;">           Signature of Authorized Officer <sup>10</sup>  <div style="text-align: center; padding: 5px;">A. S. Moore <i>A.A. Moore</i></div> </td> </tr> </table>			Date of the Actual Completion of the International Search <sup>1</sup> <div style="text-align: center; padding: 5px;">29 June 1984 (29.06.84)</div>	Date of Mailing of this International Search Report <sup>2</sup> <div style="text-align: center; padding: 5px;">(05-07-84) 5 JULY 1984</div>	International Searching Authority <sup>3</sup> <div style="text-align: center; padding: 5px;">AUSTRALIAN PATENT OFFICE</div>	Signature of Authorized Officer <sup>10</sup> <div style="text-align: center; padding: 5px;">A. S. Moore <i>A.A. Moore</i></div>																													
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